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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/344,299	06/24/1999	STEPHEN R. SCHWARTZ	1538/20	8897

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EXAMINER

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ART UNIT

PAPER NUMBER

2644

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Please find below and/or attached an Office communication concerning this application or proceeding.

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Office Action Summary

Application No.

09/344,299

Applicant(s)

SCHWARTZ ET AL.

Examiner

Brian T. Pendleton

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 24 April 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-4,8-17,19-21,24,25,28,29 and 36-43 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

- 5) ☐ Claim(s) _____ is/are allowed.

- 6) ☒ Claim(s) 1-4,8-17,19-21,24,25,28,29 and 36-43 is/are rejected.

- 7) ☐ Claim(s) _____ is/are objected to.

- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ 6) ☐ Other:

DETAILED ACTION

Response to Arguments

Applicant's arguments filed 4/24/03 have been fully considered but they are not persuasive. The rejection of claims 1-4, 19-21, 37 and 41 by the Yamada et al reference was challenged on pages 13-16. The first argument presented was that Yamada et al only allow for a simultaneous change in the entire frequency range of the two output signals. As evidence figures A and B were supplied. Examiner is not persuaded by such figures, which appear to be arbitrary graphs with no supporting data to their origin. Yamada et al teach filters 21-24 which are used to select a frequency band out of the frequency spectrum of the inputs. Elements 15 and 16 are used to adjust the level of the selected frequency bands, an increase on one side complementing a decrease on the other side. It is the Examiner's contention that other frequency bands do not affect the increase/decrease in the level of the signals in the selected frequency band since filters 21-24 are used to eliminate the other frequency bands. Thus, Yamada et al performs the same function as the claimed invention. On page 15, Applicant argues that the equalizer adjusters (filters) 21-24 are "some sort of standard hand operated tone control". This statement is not based on any description in the specification of Yamada et al, but rather speculation. One of ordinary skill in the art knows that equalizers adjust the frequency characteristics of an input signal, boosting some bands and cutting other bands. Hence, equalizers act as bandpass filters. Therefore the equalizer adjusters 21-24 can select a frequency band which can be subsequently manipulated like the claimed invention and increase the level of one

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signal while decreasing the level of the other signal using adjusters 15 and 16 via circuit element 17. With regard to the 103(a) rejection of claims 36 and 40, the apparatus of Yamada et al was equipped to select the same frequency bands for two channels, therefore one of ordinary skill would be motivated to select the same frequency bands for his/her intended purpose.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-4, 19-21, 37, and 41 are rejected under 35 U.S.C. 102(e) as being anticipated by Yamada et al, US Patent 6,301,365. Yamada et al disclose an audio signal mixer comprising first signal at CH1 input terminal, second signal at CH2 input terminal, first and second processors including equalizers 21 and 22 for selecting a frequency band and level adjusters 15 and 16 for adjusting an amplitude level of CH1 in the opposite direction of CH2 using volume control 17. Claims 1, 4, 19 and 21 are met. Per claims 2 and 20, figure 3 shows that for an increase in one channel, there is an equal decrease in the other channel. As to claim 3, there is disclosed level adjusters 11 and 12 for adjusting the level of the first and second signals prior to providing them to first and second processors. Per claims 37 and 41, there is disclosed summer 18.

Claim Rejections - 35 USC § 103

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claims 36 and 40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamada et al. Yamada et al do not disclose that the frequency selections are the same in channels one and two using the equalizers 21 and 22. However, it would have been obvious to one of ordinary skill in the art at the time of invention to choose the same frequency band. Since the equalizers are manually adjustable, there existed the possibility to use the same frequency band for the two channels. One would have been motivated to use the same band for the purpose of ensuring that the cross fading of the input signals didn't have any unwanted signals being reproduced. The cross fading manipulation would not have been effective if different frequency bands were chosen. Some of the signals that were to be decreased in amplitude and faded out would not be decreased at all if they were not chosen.

Claims 8-11, 24, 25, 28, 29, 38, 39, 42, and 43 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamada et al in view of Eastty. As discussed above, Yamada et al disclose an audio signal mixer comprising first signal at CH1 input terminal, second signal at CH2 input terminal, first and second processors including equalizers 21 and 22 for selecting a frequency band and level adjusters 15 and 16 for adjusting an amplitude level of CH1 in the opposite direction of CH2 using volume

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control 17. The channel inputs are signals generated from compact disc players. As suggested in column 7 lines 23-29, the mixer is not limited to CD players, but for other reproducing apparatuses. Musical instruments meet the criteria of reproducing apparatuses. Thus, it was within the scope of Yamada et al to input signals from instruments into the inventive mixer. The mixer provides a cross-fading operation so that one signal is decreased while the other signal is increased. The wanted signal is amplified, while the unwanted signal is attenuated. Using the mixer with instruments, one instrument signal could be attenuated while the other instrument signal is amplified. Eastty discloses an audio signal processing apparatus comprising microphone 1 placed near musical instrument(s) (first position) and microphone 2 placed near a noise source (second position) in figure 5. The apparatus is set up to cancel the noise signal from the musical signal. Therefore, it was taught to place a microphone close to a noise source for the purpose of canceling the unwanted noise signal from the sound picked up by the microphone positioned near the musical instrument(s). It would have been obvious to utilize the noise cancellation arrangement of Eastty to supply the mixer of Yamada et al with musical instrument signals for the purpose of canceling interfering noise signals during musical instrument sound reproduction. The modification of Yamada et al would have provided the one input channel with the unwanted noise signal and another input channel with the wanted musical instrument signal mixed with the noise. The mixer could have then been manipulated to decrease the noise signal amplitude while increasing the instrument signal amplitude, effectively canceling the noise. Advantages of using the Yamada et al mixer in conjunction with Eastty supplied

signals included giving the user the capability of selecting the frequency band of the signals to be processed and increasing the functionality of the mixer to include noise cancellation. Claims 8 and 24 are met. As to claim 9, there is disclosed level adjusters 11 and 12 for adjusting the level of the first and second signals prior to providing them to first and second processors. As to claims 10 and 25, the use of any type of instrument would have been obvious, since they all are susceptible to noise. The placement of the microphones would have been by experimentation for optimal noise cancellation. An artisan of ordinary skill in the art would have been able to locate the microphones in the best position without undue experimentation. Regarding claim 11, the level adjusting gain ratio would have been an obvious design choice. Per claims 28 and 29, it would have been obvious at the time of invention to use an acoustic pressure microphone for the first signal source (the wanted signal) since it emanates from the musical instrument and is best served, as one of ordinary skill in the art would have know. The type of microphone for the second signal source would have been arbitrary. As to claims 38 and 42, as stated above it was obvious to use the same frequency band in the processors. Per claims 39 and 43, there is disclosed summer 18.

Claims 12-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ono in view of Eastty. Ono discloses a signal processing system comprising two branches, one branch having high pass filter 4 and amplifier 6, and the other branch having low pass filter 3 and compressor 5. As taught in the abstract and column 2 lines 3-54, low frequency signals are reduced in level above a certain threshold in order to

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improve the signal/noise ratio assuming that the noise lies in the low frequency range. Therefore, Ono teaches decreasing one signal (low frequency noise) while increasing the other signal (high frequency sound), albeit the low frequency noise is not decreased until above a certain loudness threshold (see line 47). Ono only uses one microphone to pick up the signal, which is a mix of wanted and unwanted components. Eastty uses a plurality of microphones in its noise cancellation apparatus. The use of the apparatus of Eastty was advantageous because the noise microphone 2 generated a better estimate of the noise signal rather than the one microphone of Ono. Therefore, one of ordinary skill in the art would have been motivated to use the arrangement of Eastty. It would have been obvious to one of ordinary skill in the art at the time of invention to use a secondary microphone, per the teaching of Eastty, in the invention of Ono to improve its noise canceling capabilities. With the secondary microphone, the output signal could be sent directly to the branch with the low pass filter 3 (hereafter named the first branch). Modifying Ono to include a second microphone yields an apparatus that provides a first signal from a first position relative to an instrument and an alternative signal from a second position relative to the instrument, the first signal supplied to the low pass filter 3, the alternative signal supplied to the high pass filter 4, level adjusters 5 and 6 and combiner 7. Claim 12 is met. Per claim 13, the low pass filter has a cutoff of 1 kHz. It would have been obvious to set the high pass filter to a cutoff of 1 kHz for continuity reasons. As to claims 14 and 15, Ono is directed to speech signals. Modifying the arrangement for processing signals from instruments would have necessitated a different frequency range, therefore it would have been obvious to use

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the frequency ranges claimed and to make the filters variable as various instruments fall into different frequency bands. One of ordinary skill in the art would have realized the most advantageous pole location for the filters for a particular instrument without undue experimentation. Per claim 17, the high-pass filter of Ono has a cutoff at around 500-700 Hz and the low-pass filter has a cutoff at 1 kHz. As to claim 16, Examiner takes Official Notice that the structure of the filters were one of obvious design. An ordinary artisan would have been well versed in signal shaping for determining the best response for a system.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Brian T. Pendleton whose telephone number is (703) 305-9509. The examiner can normally be reached on M-F 7-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Forester W. Isen can be reached on (703) 305-4386. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9314.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-4700.



Brian Tyrone Pendleton
July 10, 2003



FORESTER W. ISEN
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